

研究报告

毒死蜱在水溶液中的光化学降解

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摘要 研究了不同光源、水溶液温度、pH、水质对毒死蜱在水溶液中光化学降解的影响. 结果表明, 毒死蜱在水溶液中的光解均呈一级动力学反应; 毒死蜱水溶液分别在高压汞灯、紫外灯、氙灯、太阳光照射下, 光解速度存在明显差异, 其光解半衰期分别为0.62、6.92、19.74和22.50 h; 温度对毒死蜱光降解影响显著, 温度升高, 光解速度加快, 当温度升高到35 ℃, 光解速率达到最大; 毒死蜱在酸性至中性缓冲液中光解速度稳定, 在碱性缓冲液中光解速度加快; 不同水质对毒死蜱光解的影响差异较显著, 毒死蜱光解速率大小表现为蒸馏水>塘水>河水>湖水>稻田水.

关键词 [毒死蜱](#) [光源](#) [水质](#) [温度](#) [pH](#) [光解](#)

分类号

Photochemical degradation of chlorpyrifos in water

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Abstract

In this paper, the effects of different light sources, temperature, pH, and water quality on the photochemical degradation of chlorpyrifos in water were examined under natural and simulated solar irradiation. The results showed that the photochemical degradation of chlorpyrifos in water followed the first order reaction, and its half-life was 0.62, 6.92, 19.74 and 22.50 h under high pressure mercury lamp (HPML), xenon lamp (XL), ultraviolet lamp (UV), and sunlight (SL) irradiation, respectively. Temperature had a significant effect on the degradation rate of chlorpyrifos, which was increased with increasing temperature and reached the maximum at 35 ℃. The degradation rate of chlorpyrifos was stable both in acid and in neutral buffer solution, but enhanced in alkaline buffer solution. Water quality also had a significant effect, with a decreasing degradation rate of chlorpyrifos in the sequence of distilled water>tap water>river water>lake water>paddy water.

Key words [Chlorpyrifos](#) [Light sources](#) [Water quality](#) [Temperature](#) [pH](#) [Photochemical degradation](#)

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